EPA Comments	QAPP Reference	Corresponding Bathymetry FSP Reference	DQMP Reference
Section 4.1.1, paragraph 2: This section states that the survey will have up to 100% coverage of the riverbed. The minimum expectation or goal for the percentage of the riverbed surveyed should be stated.	Section 3.2.2 Step 2: Identify the Goals of the PDI Based on the review of the selected Remedial Alternative F Modified SMA footprint (Alt F Mod) and existing data, the following information should be collected for each goal listed below during the PDI to assist in the pre-remedial design process (Geosyntec 2017): Goal 1 – Create a detailed, accurate, up-to-date bathymetric data set of the Site.	Section 1.2 (Project Overview and Objectives) provides an overview of the bathymetric survey of the site, including the objectives of the bathymetry work. Details about the surveys and data processing are provided throughout Chapters 2 and 4, Figure 1, and Appendix A	n/a
n/a	Section 3.2.3 Step 3: Identify Information Inputs To achieve the goals of the PDI, the following information inputs will be collected: Inputs for Goal 1 – To develop a detailed bathymetric data set of the Site, a site-wide multi-beam high-resolution sonar survey will be conducted throughout the Site, and the survey will be supplemented with single-beam measurements in nearshore areas to provide adequate spatial coverage. Details of the bathymetry survey are provided in the Bathymetry Survey FSP. (QAPP response to comments: A minimum goal for data coverage was not described in the RI data reports on bathymetry. The text will be revised to state that the survey goal is 80 to 100% coverage for the bathymetry survey, as some areas will be difficult to cover (under docks, ships, inside oil booms, etc.). Prior surveys had many large shoreline gaps in the multi-beam data.)	Chapter 2, paragraph 3 provides information on survey standards. Chapter 2, paragraph 5 provides information on coordinate systems and positioning checks for accuracy. Appendix A, Section II (Work Plan General Approach) provides detailed information on the bathymetric surveys: - paragraphs 1 and 2 and Figure 1 describe the extent of survey coverage - paragraph 3 describes the sonar equipment used to obtain coverage.	n/a
n/a	Section 3.2.4 Step 4: Define the Boundaries of the Study The Site extends from RM 1.9, near the mouth of the Willamette River, upstream to RM 11.8 (Figure 1). The temporal boundary for the study will be to complete field sampling activities by winter 2019. The upriver boundary of the sampling area extends from RM 11.8 up to RM 28.4. No samples will be collected downstream of the Site or the Multnomah Channel; however, a bathymetry survey will be performed up the mouth of the channel to the Sauvie Island Bridge to ensure adequate data resolution	Section 1.2, paragraphs 1 and 2 provide more detailed information on the geographic boundary of the Site. Figure 1 in Appendix A shows the survey coverage area.	Section 6.3 - Defines the boundaries of the study
n/a	Section 4.1 Sample Design 4.1.1 Bathymetry Survey The bathymetry survey is designed to produce an up-to-date bathymetric survey of the Site with a high level of detail and accuracy. Multi-beam sonar will be used to collect high-resolution data throughout the Site, supplemented with single-beam data in difficult access areas, with up to 100% coverage of the riverbed.	Section 1.2, paragraph 2 provides a more detailed overview the the bathymetric survey approach. Chapter 2, paragraph 2 provides information on the vessels that will be used. Chapter 2, paragraph 3 provides information on survey standards. Chapter 2, paragraph 4 provides information on equipment used to obtain bathyetric data and the timing of surveys of deeper water and shoreline areas. Chapter 2, paragraph 5 provides information on coordinate systems and positioning checks for accuracy. Appendix A, Section II (Work Plan General Approach) provides detailed information on the bathymetric surveys: - paragraphs 1 and 2 and Figure 1 describe the extent of survey coverage - paragraph 3 describes the sonar equipment used to obtain coverage. - paragraphs 4 through 7 describe the survey vessels and the planned approach for maximizing coverage of the survey area. Chapter 4 of the FSP (3 paragraphs) describes processing of data Chapter 5 lists the map product deliverables	Section 6.3 - References methodology from USACE and qualifications of personnel. Table 6 identifies the lead Subject Matter Expert, and cites the Bathymetry FSP
n/a	Table 3, Step 1 State the Problem: The most recent bathymetry survey was conducted in 2002. The new bathymetry survey will document current bed elevations relative to the remedial technology assignment requirements and assess changes in elevation/sedimentation over the past 15 years.	Chapter 1 (Introduction), paragraph 3 states how the bathymetric survey will provide an update of the current conditions	n/a
n/a	Table 3, Step 2 Identify the Goals of the Study: The bathymetry survey will produce an up-to-date bathymetric dataset with a high level of detail and accuracy. The new bathymetry data will also be used to help identify target areas for surface sediment sampling, refine the elevation clearances for dredging and capping, and adjust the estimated dredge volumes.	n/a	n/a
n/a	Table 3, Step 3 Indentify the Information Inputs: Multi-beam sonar throughout the site, supplemented with lead-line measurements in difficult to access areas.	Appendix A, Section II (Work Plan General Approach) provides detailed information on the bathymetric surveys: - paragraph 3 describes the sonar equipment used to obtain coverage.	Figure 6 is a flow diagram of data collection processes, compilation and the input to master data repository.
n/a	Table 3, Step 4 Define the Boundaries of the Study: Geographic Boundary: The bathymetry survey will be conducted over the entire Site from RM 1.9 to RM 11.8. Temporal Boundary: The bathymetry survey will be conducted during the first quarter of 2018.	Section 1.2, paragraphs 1 and 2 provide more detailed information on the geographic boundary of the Site. Figure 1 in Appendix A shows the survey coverage area. Chapter 3 (Project Schedule) states the anticipated survey schedule and duration of surveys.	Section 6.3 - Defines the boundaries of the study
n/a	Table 3, Step 5 Determine the Analytic Approach: If the bathymetry survey data indicate significant riverbed morphological changes, then the estimated dredge volumes and estimated clearances for dredging and capping may need to be revised.	n/a	Page 14 - Countour maps of surveyed areas will be a deliverable, along with maps products and georeferenced TIFF images for each difference analysis.

EPA Comments	QAPP Reference	Corresponding Bathymetry FSP Reference	DQMP Reference
n/a	Table 3, Step 6 Specify Performance or Acceptance Criteria: Decisions concerning the bathymetry survey are expected to be straightforward. Ground truthing of the digital terrain model created from the bathymetric survey will provide an assessment tool to determine the acceptability of the dataset.	Ground truthing of the model is not part of the bathymetric survey. Appendix A, Section III (Quality Control Plan) discusses the steps that will be taken prior to and during surveys to ensure data quality.	Page 14 - Standards, references, geodetic controls, deliverables. Page 21 - EPA geospatial deliverables, EPA requirements on data packaging. Page 22 - master data repository. Table 6 - other QA/QC requirements.
n/a	Table 3, Step 7 Describe the Plan for Obtaining the Data: A bank-to-bank survey using multi-beam sonar will be conducted throughout the Site in the first quarter of 2018. The rationale for the testing strategy is further explained in the Workplan and task-specific FSP.	Chapter 2, paragraph 3 provides information on survey standards. Chapter 2, paragraph 4 provides information on equipment used to obtain bathyetric data and the timing of surveys of deeper water and shoreline areas. Chapter 2, paragraph 5 provides information on coordinate systems and positioning checks for accuracy. Appendix A, Section II (Work Plan General Approach) provides detailed information on the bathymetric surveys: - paragraphs 1 and 2 and Figure 1 describe the extent of survey coverage - paragraph 3 describes the sonar equipment used to obtain coverage. - paragraphs 4 through 7 describe the survey vessels and the planned approach for maximizing coverage of the survey area. Chapter 3 (Project Schedule) states the anticipated survey schedule and duration of surveys.	Diagram of subcontractors in Figure 2. Figure 6, also mentions DEA as the subconsultant providing of data.